

REMARKS

Claims 1-9 are all the claims pending in the application.

Claims 1 and 3 have been objected to for containing informalities. Claims 1, 4 and 5 have been rejected under 35 U.S.C. § 112, second paragraph. Claims 1-3 and 6-9 have been rejected under 35 U.S.C. § 103(a).

Applicants have amended Claims 1, 3, 4 and 5 herewith.

In Claim 1, the phrase “tow kinds of” has been replaced with “two,” the phrase “at least two kinds of metals” has been changed to “two different metals” and the phrase “in the substantial absence of hydrogen halide gas” has been inserted after “metals” in line 4. Support for the recitation “in the substantial absence of hydrogen halide gas” can be found, for example, on page 8, lines 12-17 of the specification.

In Claim 3, the phrase “comprising heating at least three metal salts” has been inserted after “claim 1” in line 1. Support for this amendment can be found, for example, on page 9, line 24, through page 10, line 9.

In Claim 4, the term “kinds” has been replaced with the term “different.”

In Claim 5, the recitation “the metal halide salt and the non metal halide salt are made of the same metal” has been deleted. The recitation “each non metal halide salt is made of the same metal as one of the metal halide salts.”

I. Objection to Claims

The Examiner has objected to Claims 1 and 3 because of the following informalities: (i) in Claim 1, it appears that “tow” was intended to be “two” and (ii) in Claim 3, it appears that the quotations marks are superfluous.

In order correct these formalities, Applicants have amended Claim 1 to replace the word “tow” with the word “two.” Further, Applicants have amended Claim 3 by removing the quotation marks.

In view of the amendments, Applicants respectfully request that the objections to Claims 1 and 3 be withdrawn.

III. Claim Rejections Under 35 U.S.C. § 112, second paragraph

The Examiner has rejected Claims 1, 4, and 5 under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In the rejection of Claim 1, the Examiner specifies that the phrases “at least two [sic] kinds of metal salts” and “two kinds of metals” are allegedly indefinite.

In the rejection of Claim 4, the Examiner specifies that the phrase “at least two kinds of metal atoms” is allegedly indefinite.

In the rejection of Claim 5, the Examiner asserts that the phrase “complex metal oxide” is indefinite as to how a complex metal oxide can be formed in Claim 1 when the same metal is used in each metal salt as claimed in Claim 5. The Examiner also asserts that the language “are made of the same metal” is indefinite.

Applicants’ Response

Regarding the rejection of Claim 1, Applicant have amended the relevant portions of Claim 1 to read “at least two metal salts” and “two different metals.”

Turning to the rejection of Claim 4, Applicant have amended the relevant portion of the claim to read “at least two different metals.”

Regarding the rejection of Claim 5, Applicants have amended Claim 5 (as well as Claim 3) to overcome this rejection. Applicants have amended Claim 5 to recite that “wherein each non metal halide salt is made of the same metal as one of the metal halide salts.” In order to provide amended Claim 5 with sufficient antecedent basis, Applicants have amended Claim 3 to include the recitation “comprising heating at least three metal salts.” Applicants have amended Claim 3 in this manner because there are at least three metal salts needed to produce a complex metal oxide using this particular method.

In view of the amendments, Applicants respectfully request that the rejections to Claims 1, 4 and 5 be withdrawn.

IV. Claim Rejections Under 35 U.S.C. § 103

The Examiner has rejected Claims 1-3 and 6-9 under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent No. 5,846,505 to Saegusa (“Saegusa”). The Examiner has also rejected Claims 1-3 and 7 under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent No. 5,688,480 to Mohri et al. (“Mohri”). The Examiner has further rejected Claims 1 and 7-9 under 35 U.S.C. § 103(a) as allegedly being unpatentable over EP 1065693 (“EP ‘693”).

A. Rejection of Claims 1-3 and 6-9 under Saegusa

The Examiner asserts that Saegusa suggests the presently claimed invention. The Examiner concedes that Saegusa does not expressly state that it is necessary to reach a

temperature at which transition to a metal oxide occurs. The Examiner argues, however, that the temperature is suggested because Saegusa discloses calcining at the same temperatures presently claimed to form the same metal oxides.

Applicants' Response

The present invention relates to a method for producing a complex metal oxide powder whose particles are very fine and in an approximately spherical shape. This method comprises a heating step, wherein metal salts are heated to the temperature at which transition to a complex metal ion occurs. The method further comprises calcining the metal salts in the presence of a hydrogen halide gas. Applicants have amended Claim 1 to recite that the heating step occurs in the substantial absence of hydrogen halide gas.

Saegusa is directed to a method for producing a complex metal oxide which comprises calcining a mixture of a barium compound, such as barium carbonate, and a titanium compound, such as metatitanic acid, in the presence of hydrogen iodide gas. The hydrogen iodide gas is generated by vaporization and decomposition of ammonium iodide.

Applicants respectfully assert that the amended Claim 1 is not rendered obvious by the teachings of Saegusa. Specifically, Applicants assert that Saegusa fails to teach or suggest each and every element recited in Claim 1.

Saegusa does not teach a heating step that is performed in the substantial absence of a hydrogen halide gas. Saugusa only teaches heating (calcining) in the presence of a hydrogen halide gas.

The incorporation of a heating step that is performed in the substantial absence of a hydrogen halide gas, the instantly-claimed invention possesses unexpectedly superior characteristics with respect to the prior art. The Examples illustrated in the specification demonstrate that the desired complex metal oxide powder cannot be obtained without heating the salts in the substantial absence of the hydrogen halide gas. Saegusa does not suggest that such a benefit may be obtained with such a heating step.

In the Examples, Comparative Example 2 demonstrates that a complex metal oxide powder comprised of very fine, spherically shaped particles cannot be obtained. On the other hand, the examples produced using the claimed process are of the desired size and spherical shape. Therefore, the present invention demonstrates an unexpectedly superior complex metal oxide powder with respect to the powder produced by the Saegusa process.

In view of the above, Applicants respectfully request that the § 103 rejection based on Saegusa be reconsidered and withdrawn.

B. Rejection of Claims 1-3 and 7 under Mohri

The Examiner asserts that Mohri suggests the presently claimed invention. The Examiner concedes that Mohri does not expressly teach heating the metal salts to a temperature at which the transition to a complex metal oxide occurs. It is further asserted, however, that the temperature is suggested because the reference discloses calcining at the same temperatures presently claimed to form the same metal oxides.

Applicants respectfully assert that Mohri does not teach or suggest all of the claimed limitations.

Mohri is directed to a method for disclosing a method for producing a complex metal oxide. The teachings of Mohri are limited to a method wherein the metal compound mixture is calcined in the presence of a hydrogen halide gas, as opposed to being heated in the substantial absence of the hydrogen halide gas. Mohri does not teach that the salts should be heated in the substantial absence of a hydrogen halide gas. Thus, Mohri does not teach all of the elements of Claim 1.

Furthermore, as discussed above, the absence of the claimed heating step in the process will not yield a complex metal oxide powder with the desired properties. Therefore, the present invention demonstrates an unexpectedly superior complex metal oxide powder with respect to the powder produced by the Mohri process.

In view of the above, Applicants respectfully request that the § 103 rejection based on Mohri be reconsidered and withdrawn.

C. Rejection of Claims 1 and 7-9 under EP'693

As with the previous rejections, it is asserted that EP '693 teaches the claimed invention, but does not expressly teach heating the metal salts to a temperature at which the transition to a complex metal oxide occurs. As above, it is asserted that the calcination step of the reference suggests the instantly claimed heating step.

EP '693 is directed to a method for producing a magnesium titanate powder comprising calcining a mixture of titanium oxide and magnesium hydroxide in the presence of hydrogen chloride.

Amendment Under 37 C.F.R. § 1.111
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EP '693, however, does not teach the heating step of the present invention. Thus, EP '693 does not teach or suggest all of the elements recited in Claim 1.

As discussed above, and demonstrated in Comparative Example 2, without incorporating a step wherein the metal salts are heated in the substantial absence of a hydrogen halide, one cannot obtain fine, spherically-shaped particles. Therefore, the instantly claimed process produces a complex metal oxide powder that is unexpectedly superior with respect to the powder produced in EP '693.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



Patrick F. Gallagher
Registration No. 54,109

SUGHRUE MION, PLLC
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

WASHINGTON OFFICE

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